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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,876	08/16/2005	Tetsuro Mizushima	890050.505USPC	4217

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EXAMINER	
VERDERAME, ANNA L	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
12/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,876	MIZUSHIMA ET AL.	
	Examiner	Art Unit	
	ANNA L. VERDERAME	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,8 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed on 09/09/2008 has been carefully considered. A response is presented below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. EP 1 154 413 in view of Narumi et al., 45 GB Rewriteable Dual-Layer Phase-Change Optical Disc Substrate with a Transmittance Balanced Structure, October 2001. and further in view of Nishihara et al. US 2002/0054983.

Inoue et al. teaches a single layer optical recording medium like that shown in figure 2 comprising a substrate 20, a reflective layer 5, a dielectric later 32 a recording layer 4, a bi-layer dielectric layer 21, and a light-transmitting layer 2. The medium is read through the light-transmitting layer. This is a near-field system(0064-0067). It is described at (0048) that the thermal conductivity of sublayer 31D should be greater than that of sublayer 31C in order to achieve a rapid cooling structure.

In example 1 an optical recording medium comprising a reflective layer of an Ag-alloy having a thickness of 00 nm, a second ZnS-SiO_2 dielectric layer having a thickness of 20 nm, a recording layer, a ZnS-SiO_2

first dielectric layer and a light transmitting layer 2 were formed on a substrate(0073-0079). **The medium was evaluated using a laser having a wavelength of 405 nm and a NA of 0.85(0082).** Example 5 was formed like example 1 (0105). In an example the dielectric sub-layer 31 C was formed of ZnS-SiO_2 and the sub-layer 31D was formed of **aluminum nitride to have a thickness of 100 nm(claim 8).**

Narumi et al. teaches a dual-layer optical recording medium as shown in figure 1 comprising an Al-alloy reflective layer, a ZnS-SiO_2 protective layer, a GeN interface layer, a Ge-Sb-Te recording layer, a GeN interface layer, a ZnS-SiO_2 protective layer an intermediate layer, and Ag-alloy reflective layer, a GeN interface layer, a Ge-Sb-Te-Sn recording layer, a Ge-N interface layer, a ZnS-SiO_2 protective layer and a cover layer were formed on a polycarbonate substrate. Narumi et al. is read through the cover layer using a laser having a wavelength of **405 nm and a numerical aperture of 0.85.** This is a near-field system and is read through the top.

The examiner notes that visually in figure 1 the Ag-alloy reflection layer is thinner than the Al-alloy reflection layer.

It would have been obvious to one of ordinary skill in the art to modify the single layer media taught by Inoue et al. at (0106) by forming a spacer layer and a second recording stack between the substrate and the first reflective layer to form a dual-layer medium like that taught by Narumi et al. with the reasonable expectation of forming a recording medium having increased recording capacity and maintaining the

rapid cooling effects realized by Inoue et al. In the resulting medium the single layer media taught by Inoue et al. would replace the LO recording stack in the medium taught in figure 1 of

The combination of Inoue et al. and Narumi et al. does not teach that the reflective layer in the LO stack is translucent and has a thickness of less than 20 nm. Further, the combination does not teach that the thickness of the second dielectric layer in the LO stack has a thickness of less than 15 nm. Finally, the combination does not teach the provision of a base protective layer between the reflective layer and the intermediate layer.

Nishihara et al. teaches a **dual-layer optical recording medium** comprising a first polycarbonate substrate 1, a 40 nm ZnS-SiO_2 film as the lower protective layer 2, a GeN first lower interface layer 3 having a thickness of 5 nm, a 4-10nm recording layer 4, a first upper interface layer having 5 having a thickness of 5 nm, **a ZnS-SiO_2 upper protective layer 6 having a thickness of 5 nm**, a GeN upper interface layer 7 having a thickness of 5 nm, an **Ag alloy reflective layer 8 having a thickness of 10 nm**, a GeN interface layer 9 having a thickness of 5 nm and a **ZnS-SiO_2 transmittance adjustment layer having a thickness of 30 nm(0152) and then the second recording composite**. It is the position of the examiner that the ZnS-SiO_2 transmittance adjustment layer corresponds to applicants' base protect film disposed between the translucent reflective film and the transparent intermediate layer. An optically separating layer 21 was formed by coating a UV-ray curable resin onto the first information layer 11(0153). In order to increase transmittance the thickness of the first reflective layer 8 is in the range of 5 to 15 nm (0081). Materials and properties of the

optically separating layer are taught at (0082). Materials for the protective layers are taught at (0062).

It would have been obvious to one of ordinary skill in the art to modify the optical recording medium rendered obvious by the combination of Inoue et al. in view of Narumi et al. by forming the second dielectric layer in the LO stack to have a thickness of less than 15 nm, forming the reflective layer in the LO stack to have a thickness of less than 20nm so that the recording light can get through to the further recording layer, and forming a base protect film between the reflective layer of the LO layer and the intermediate layer to prevent deformation of the intermediate layer by heat from the reflective layer.

Nishihara et al., Inoue et al, and Narumi et al. are all analogous art which relate to phase change optical recording media. Nishihara et al. and Narumi et al. teach dual-layer optical recording media. Thickness considerations for the layers in dual-layer media are different than those for single layer media. For example, the reflective layer on the light incident side must be thin enough to allow recording light to pass through to the next recording layer and thick enough to act as a reflective layer. The base protective layer of Nishihara et al. will be expected to perform the same function in the media rendered obvious above based on its placement and the material which it is made of.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6,149,999- Suzuki et al. teaches an optical recording medium like that shown in figure 1 comprising a substrate 1, a heat diffusion layer 7, a lower protection layer 2a reflection control layer 3, a recording layer 4, an upper protective layer 5 and a reflection layer 6. Figure 1 illustrates the flow of heat generated in the recording layer. Part is conducted to the reflection layer and another part is conducted and diffused to the heat radiation layer. A medium having an adequate cooling rate necessary for quenching upon amorphous formation is formed (10/ 51-11/2). **Aluminum nitride , Silicon carbide,** and aluminum oxide are taught as materials for the heat diffusion layer (10/32-47). **In example 6 a heat diffusion layer of AlN having a thickness of 50 nm is formed on a substrate(21/45-55).**

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA L. VERDERAME whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1795

/Anna L Verderame/
Examiner, Art Unit 1795